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Botanical Gazette.

Vol. VII.

FEBRUARY, 1882.

No. 2.

Editorial.—MR. J. G. LEMMON has published a small pamphlet entitled "Ferns of the Pacific Coast, including Arizona." A full conspectus of the tribes and genera is given, and also a classified list of the species, giving the principal points of distinction and places of growth. The announcement is also made that Mrs. Lemmon is about to publish a "Manual of Pacific Ferns." The price of the pamphlet is 35 cts., or \$3.50 per dozen.

MR. J. SAUNDERS has given in *Hardwicke's Science-Gossip* the results of his study of Gray's Manual of Botany with reference to the colors of fruits of the northern United States. He includes both colored fruits and seeds, and finds that there is a great preponderance of red and black, the former being about 45 per cent., the latter about 33 per cent., while yellow, blue and white occur only in very limited numbers.

S. E. CASSINO is just about to publish a work on North American Lichens by our highest authority, Prof. Edward Tuckerman. It will appear in volumes and be sold at a very low figure. As a very small edition is to be printed and the work is not to be stereotyped orders should be sent in early. The price for Vol. I has been fixed at \$3.50, though orders received before March 1st will be filled at 10 per cent. discount. The first volume will be 8vo. and will contain nearly 300 pages, comprising the *Parmeliacei*, *Cladoniei* and *Clenogonie*.

JAMAICA MUST BE a paradise for the fern collector, over 450 species being enumerated as belonging to its flora.

DR. ENGELMANN, in the January *Torrey Bulletin*, notes the occurrence of *Sagittaria natans*, Mx., in the Charles River, Mass., observed by Mr. C. F. Faxon, also observed in the Noponset and Ipswich Rivers by Mr. John Robinson. It never perfects fruit and hence seems not to be at home in these northern waters. In Gray's Manual these northern forms were included in *S. graminea*. *S. pusilla*, Pursh, must now be considered but a subterrestrial form of *S. natans*.

MR. DARWIN'S methods of work are peculiarly his own and their results have made astonishing additions to scientific knowledge, but because Mr. Darwin's methods have yielded such results to him it is no indication that any one using the same methods will become a successful investigator. It needs the man as well as the methods, and

there are investigators in this country who have adopted the latter without any thought of the need of the former, and their observations are "as utterly barren of important results as an undigested weather record." The pages of our scientific periodicals are sometimes burdened with such material.

EDITOR GAZETTE :—Your note about oaks on page 2 of the January number puts a greater responsibility on me than I am capable to bear. I have seen of Buckley's Oaks only miserable and incomplete dried specimens and could therefore only make guesses and suggestions on them and not "decisions." How important and necessary it is for a "closet-botanist" to occasionally refresh his botanical vision by communing with living nature I have seen on my extended visits to the Pacific States and the Rocky Mountains. My observations there have furnished new views and suggested different corrections of former statements; a few of them you printed in the last number, others will follow. But I must confess that I am not any farther advanced in the knowledge of those Texas Oaks, never having had the opportunity to study them in numerous and complete herbarium specimens nor having seen them growing. Buckley's *Quercus Texana* is undoubtedly correctly placed by him with the polymorphous *Q. rubra*. —G. ENGELMANN.

NO DEPARTMENT OF BOTANY seems to the average botanist so unsatisfactory and perplexing as that of Fossil Botany. We all know how difficult it is to name plants when the specimens are only tolerably complete, but to name them from the merest fragments of stems and leaves is something that must border very closely upon guess work. Such naming too becomes of very great importance when the age of formations rests upon the evidence of fossil plants. It would sometimes seem as if the botanist started in with the idea that the fragments must of necessity belong to genera and species unlike any living in the same region. Still some splendid work has been done and our countryman, Mr. Lesquereux, has had by no means the least share in it. As an instance of the uncertainty of such work at the best. Mr. J. Starkie Gardner, in a late copy of *Nature*, speaks of Dr Heer's work upon the fossil flora of Madeira. The terminal leaflets of a *Rubus* were referred to *Corylus*, and the various leaflets of another species of *Rubus* were referred to *Corylus*, *Ulmus* and *Psoralea*, and so on in several other instances.

OF THE MULTIPLICATION OF SPECIES there is no end. The collector's first ambition is to find new species and when that is gratified and many new species bear the discoverer's name, the next ambition is to name the new species himself. It is not very hard, nor does it take many appliances to name and describe a species as new, but it is very hard and it takes the greatest command of appliances to discover the fact of its being really new. One generation coins specific names, a large percentage of which appear in the synonymy of the next generation. Any one looking over the species of Torrey and Gray's Flora of a generation ago and then hunting in Watson's Index to see what has

become of them will appreciate this fact. But still species are described by botanists with a limited collection of plants, a still more limited library and sometimes even with no proper conception of what constitutes a species. Any one may get the credit of describing a new species authoritatively by referring it to competent authorities, upon whom after all will fall the burden of the work in deciding its genuineness. Many forms are now enjoying the pleasure of a name "for a season," and many a species in this and other countries is bearing two or more names, and only waiting for the question of priority to be settled.

MR. F. KITTON in *Science-Gossip* describes the method of staining vegetable tissues practised as early as 1774. We give it for the benefit of some of our friends who are laboring over the preparation of beautiful slides, as containing some hint that may be of service. "Dissolve one drachm of sugar of lead in one ounce and a half of water; filter the material. A stem, or piece of a small branch of a tree is to be immersed upright for half its length in this solution, and covered with a glass to prevent evaporation, and allowed to remain two days in it. Cut off the part immersed and throw away. Place the remaining piece in orpiment lixivium (which is thus prepared). Place in a basin two ounces of quicklime and an ounce of orpiment; pour upon them one pint and a half of boiling water. When it has stood a day and a half, it is fit for use. By this process a deep brown stain is produced." This is taken from a work on "The Construction of Timber from its Early Growth, explained by the microscope and proved from experiments in a great variety of kinds. By John Hill, 1774."

THERE ARE, and may be always will be, two classes of workers with the microscope. The one class have the microscope itself for an end, and to these the euphonious name microscopist is usually applied. As they have in view continually the perfection of the instrument and all its appliances they naturally run to large and complicated stands with an endless array of accessories. There are the best of reasons for everything they use and they obtain the best of results. The other class consider the microscope simply as a means and have made the science of biology what it is to day. But it is a strange fact that these workers always (we speak now strictly of botanical workers) use the simpler instruments and fewer appliances. The great laboratories of to-day, those which are furnishing the material for books and are filling our scientific periodicals with the results of their work, are equipped with very simple instruments. Does it follow that if such work can be done by ordinary instruments even more astonishing results can be obtained by using finer ones? Or is it a fact that the extra appliances, etc., are more things of "fuss and feathers" than fruitful additions to biological laboratories? A discussion is now going on in the *Am. Monthly Micr. Journal* concerning the relative value of large and small microscopes, the reading of which suggests to the working biologist some such thoughts as the above.